

REMARKS

Applicants are amending their claims in order to further clarify the definition of various aspects of the present invention. Specifically, Applicants are amending each of claims 1 and 2 to recite a cassette hold means for holding a first cassette storing substrates to be processed “and a second cassette storing dummy substrates on a substantially horizontal plane”; to recite a transfer chamber connected to the plurality of vacuum processing chambers with gate valves; to recite “two lock chambers”, having in addition to the evacuating device a gas introduction device and gate valves, for transferring the substrates and the dummy substrates between the atmosphere and the transfer chamber in a vacuum; to recite an “atmosphere” conveyor for transferring the substrates and dummy substrates between the cassettes and the “two lock chambers”; to recite an evacuating conveyor for transferring the substrates and the dummy substrates between (a) the two lock chambers and (b) the plurality of vacuum processing chambers; to recite that the control means is arranged to control the atmosphere conveyor so as to transfer substrates and dummy substrates respectively between first and second cassettes and the “plurality of” vacuum processing chambers “through gate valves”; and to recite that the control means is arranged to control the atmosphere conveyor and the evacuating conveyor so that substrates to be processed and dummy substrates do not exist inside the same chamber in vacuum.

Applicants respectfully submit that the claims presented for consideration by the Examiner patentably distinguish over the teachings of the reference applied by the Examiner in rejecting the claims in the Office Action mailed October 26, 2004, that is, the teachings of U.S. Patent No. 4,917,556 to Stark, et al., under the provisions of 35 USC 102 and 35 USC 103.

It is respectfully submitted that this reference as applied by the Examiner would have neither taught nor would have suggested such vacuum processing apparatus as in the present claims, including, inter alia, the cassette hold means for holding the cassettes storing substrates to be processed and storing dummy substrates on a substantially horizontal plane; and the atmosphere conveyor for transferring the substrates and the dummy substrates between (a) the first and second cassettes and (b) the two lock chambers. See claims 1 and 2.

The apparatus according to the present invention is simple in composition and achieves reduced contamination of a substrate to be processed, increasing yield of products. That is, the present apparatus, having the cassette hold means and two lock chambers, with an atmosphere conveyor for transferring the substrates and the dummy substrates between the cassettes and the two lock chambers, is relatively simple in construction without, e.g., a need for rotation of the substrates and dummy substrates, and with reduced contamination of a substrate to be processed since the atmosphere conveyor and evacuating conveyor are controlled so that substrates to be processed and dummy substrates do not exist inside the same chamber in vacuum. Furthermore, with the atmosphere conveyor for transferring substrates and dummy substrates between (a) the first and second cassettes and (b) the two lock chambers, simplified structure is achieved, while providing efficient and effective transfer of substrates to be processed and dummy substrates.

Stark, et al. discloses a modular system for a semiconductor wafer processing machine. The processing machine is provided with multiple load locks for loading whole cassettes into the vacuum environment. Wafer handling modules containing robot arms form a spine of the machine through which wafers are passed, with various processing modules being attached to the sides of the wafer handling

modules. See column 1, lines 41-46. As for the wafer handler and load lock modules in various embodiments, note column 2, line 43 through column 3, line 10, of Stark, et al. See also column 3, lines 26-51.

Attention is also respectfully directed to the second embodiment described in Stark, et al. and shown in Fig. 3. This apparatus is described, for example, from column 5, line 21 through column 6, line 52, of Stark, et al. See also column 11, lines 58-62 of this patent.

As can be seen, for example, in column 2, lines 59-65 of Stark, et al., with respect to the first embodiment shown in Fig. 1, the wafer cassettes are tilted at a small angle relative to the horizontal. This same structure is provided in the embodiment of Fig. 3 of Stark, et al., noting that Stark, et al. describes that the wafer handler and load lock module 40a in Fig. 3 is the same as wafer handler and load lock module 400 shown in Fig. 1. See column 5, lines 28-30 of Stark, et al. Such disclosure in Stark, et al. would have taught away from the cassette hold means for holding the cassettes on a substantially horizontal plane, as in claims 1 and 2.

In addition, it is respectfully submitted that this structure of Fig. 1 of Stark, et al. has a respective wafer handler 405 for each load lock module 400. It is respectfully submitted that this reference would have taught away from the atmospheric conveyor for transferring substrates and dummy substrates between (a) the first and second cassettes and (b) the two lock chambers, and advantages thereof, of simplified apparatus, e.g., reducing the number of atmosphere conveyors.

Interpretation by the Examiner of the teachings of Stark, et al., in Item 3 on page 2 of the Office Action mailed October 26, 2004, is noted. Note, however, that the claims have presently been amended to recite an atmosphere conveyor and two lock chambers, with specified relationships therebetween. It is respectfully submitted

that Stark, et al. would have neither taught nor would have suggested such structure and relationships therebetween, as in the present claims.

In view of the foregoing comments and amendments, reconsideration and allowance of the claims presently in the application are respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 CFR § 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to the Deposit Account No. 01-2135 (Case No. 520.30414C56) and please credit any excess fees to such Deposit Account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

A handwritten signature in black ink, appearing to read "William I. Solomon", with a long horizontal flourish extending to the right.

William I. Solomon
Registration No. 28,565

1300 North Seventeenth Street
Suite 1800
Arlington, VA 22209
Tel.: 703-312-6600
Fax.: 703-312-6666

WIS/slk